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THE DEVELOPMENT OF YOUNG COSTA HUMMINGBIRDS

By ROBERT S. WOODS

WITH FOUR PHOTOS BY THE AUTHOR

WHILE following the progress of a pair of young Costa Hummingbirds (*Calypte costae*) at Azusa, California, in May, 1921, I was impressed with their slow growth as compared with that of the smaller passerine birds; so, on finding another nest, on May 18, 1922, I kept as accurate a record as possible of their development.

This latter nest (figure 46) was located about four feet from the ground on a lower limb of an avocado tree some ten feet in height. It contained the usual two eggs when discovered and for two weeks thereafter. On the morning of June 1 there appeared one black, grub-like young hummer, with stubby, triangular bill and a double row of yellowish down along the back, the body being otherwise bare. The afternoon of the following day the second egg was hatched. The egg shells were not removed from the nest. The bill of the newly hatched hummingbird is a little longer than the width at the base, light in color, and abruptly differentiated from the head, which is comparatively broad and straight across the front. The abdomen is reddish brown, and the sides as well as the upper parts are black.

On the morning of June 7 pin-feathers had appeared on the older bird and by the afternoon of June 8 on the younger also. The bills were longer by this time and more tapering from the head and were mainly dark colored. On the 10th the older one had assumed the peculiar position shown in figure 47, with bill pointing straight up. This attitude is apparently made necessary by the fact that the young hummer is too long for the nest, but not yet large enough to hold its head above the edge. On the 13th the feathers were becoming soft and fluffy-looking and the older bird could open its eyes, at least partly. By the 15th both birds were able to sit up and stretch their wings and view the surroundings.

When inspected on June 17 the older hummer appeared fully feathered except for the shortness of tail and wing feathers. The bill was about the length of the head and was still straight and conical in outline. On the evening of the 21st the older bird seemed alert and ready to leave the nest. Upon moving the limb on which the nest was placed both birds suddenly flew to neighboring trees thirty feet away. The younger, though it could fly from one tree to another,

had difficulty in securing a foothold and generally dropped to the ground. It made no attempt to escape when picked up and when finally replaced in the nest, as an experiment, it settled itself contentedly and remained there for about 24 hours, leaving when I approached the nest the next evening. At that time its flight was stronger and it seemed well able to care for itself.

For purposes of comparison I noted the approximate time spent in the nest by the young of several common birds nesting at about this same time. These were the House Finch (five nests), Green-backed Goldfinch, Western Lark Sparrow, Anthony Brown Towhee (two nests) and Western Mockingbird. The length of time ranged from 10 to 16 days, the longest in the case of the Mockingbird and perhaps one of the Linnets, the shortest for the Lark Sparrow and Towhee, which probably left their nests rather prematurely. These figures are

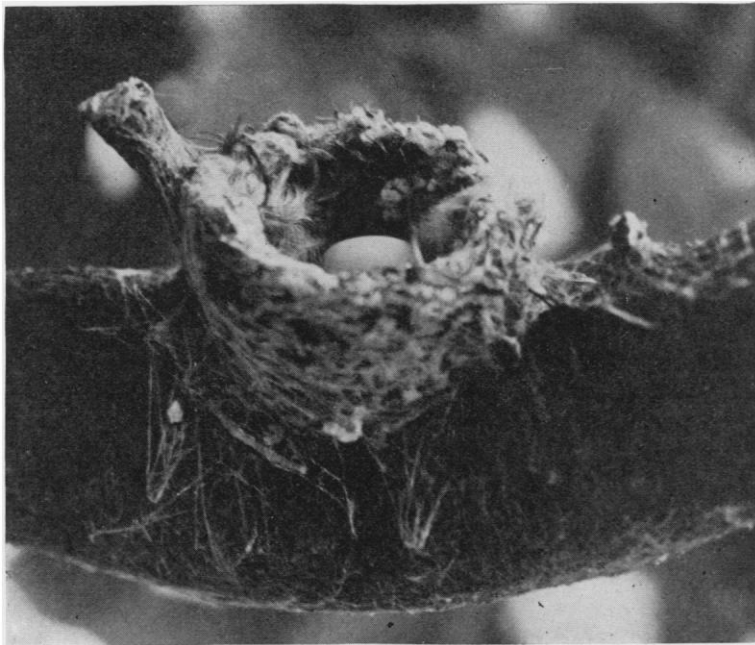


Fig. 46. NEST (NO. 2) OF COSTA HUMMINGBIRD. AZUSA, CALIFORNIA, MAY 19, 1922.

not intended to be accurate, but they are in all cases considerably less than the 20 days which the Hummingbirds required. The corresponding period for the brood observed the previous year was not determined exactly, but I believe it to have been 22 or 23 days.

On June 2, 1922, I found another Costa Hummingbird building a nest near the end of a long horizontal limb of a good-sized avocado tree, at a height of about five feet from the ground. Her method was first to alight in the nest, then place the material under her (figure 48) and compact it by treading with the feet and turning about. Material for the outside of the nest was placed while hovering or while perched on a branch. On one occasion after leaving the nest the bird flew up to a twig a few feet above, whereupon I was surprised to see another hummer alight in the nest and rearrange some of the material, after-

wards sitting there for some time until the presumably rightful owner presently darted at the intruder and drove her away. The nest was composed largely of small achenes bearing soft pappus. Other items noted were fibers, minute leaves, feathers and a short piece of string, the whole bound securely to the branch with cobwebs.

One egg was found in this nest on the afternoon of June 6 and another the next morning, this before the walls of the nest were entirely filled in. The nest was by no means considered complete with the laying of the eggs, but additional material was constantly brought, so that at times the eggs were almost concealed by it. After 14 or 15 days' incubation the bird disappeared from the nest and was seen no more, at least in that vicinity.

The behavior of the hummingbird on the nest is directly opposite to that of many other birds. It does not remain motionless in the hope of escaping notice,



Fig. 47. YOUNG COSTA HUMMINGBIRDS IN NEST (NO. 1). AZUSA, MAY 18, 1921.

but often flies when approached within 30 or 40 feet. If one stands quietly even at a much less distance it will soon return, to leave again at any sudden motion. Thus the idea of concealment of the location of its nest does not enter into its thoughts or instincts. Those nests which I have found have been so situated that a clear outlook could be obtained in at least two directions. The hummingbird while incubating seems to require but little time for procuring food, as I have seldom found them absent from their eggs, and of course the female is not relieved by her mate, as is the case with so many birds, nor is she fed by him as are the female finches. The owner of the nest shown in figure 49 was more shy than usual and it was necessary in securing the photograph to remain at some distance, operating the shutter with a thread while reflecting light on the sub-

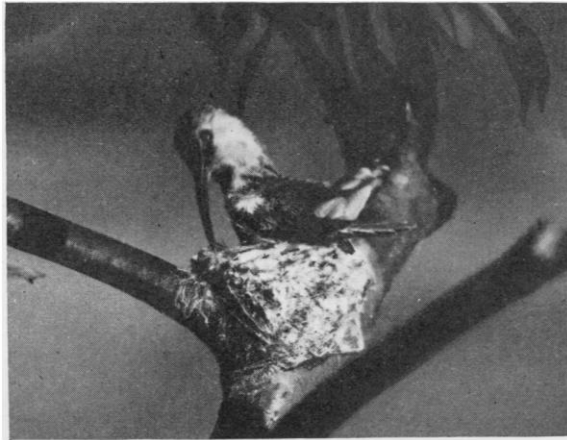


Fig. 48. FEMALE COSTA HUMMINGBIRD ARRANGING NEST MATERIAL. NEST NO. 3; AZUSA, JUNE 8, 1922.



Fig. 49. COSTA HUMMINGBIRD FEEDING YOUNG. NEST NO. 2; AZUSA, JUNE 16, 1922.

ject by means of a mirror. She had no fear of the camera, however, and once returned to the nest while my head was under the focusing cloth.

In no case have I seen a male hummingbird in the vicinity of the nest or in any way showing interest in the matter. In fact, all the males had apparently started on their southward migration by the middle of June, 1922, or soon after the eggs had been laid in the last nest and while the young in the second nest were no more than half grown. None was seen earlier than May, probably on account of the lateness of the season, so their stay was very short this year. By July 1 the females and young were also noticeably scarcer. If the owner of the third nest had remained to hatch out and rear her young she would probably have been detained beyond the usual time for migrating.

Despite the small size of the hummingbirds, and of the Costa in particular, the eggs and young as well as the adults must be peculiarly immune to depredations of natural enemies, as evidenced by their survival in the face of several unfavorable conditions brought out in the foregoing notes and which may be enumerated as follows: First, only two eggs are laid and presumably only one brood raised each year by the Costa Hummingbird; second, the period during which the young are confined to the nest is from 50 percent to 100 percent greater than in the case of the smaller passerine species; third, the young are entirely dependent upon the female parent for sustenance. That the hummingbirds are able to maintain their numbers under these handicaps can but increase our admiration for these tiny but highly specialized and intelligent creatures.

Los Angeles, California, August 21, 1922.

EVIDENCE OF MUSICAL "TASTE" IN THE BROWN TOWHEE

By RICHARD HUNT

TO BEGIN WITH I wish to establish in the minds of those readers who do not happen to be familiar with the Brown Towhee (*Pipilo crissalis crissalis*) a working idea of this bird's song. The song is normally a staccato series of sharp metallic clinks with intervals constantly decreasing so as to carry the utterance into a thrill or vibration toward the end. The "shape" can be easily imagined by thinking of some resilient object, say a golf ball, dropped on a hard surface and allowed to bounce itself motionless, thus: *tip—tip—tip—ip-prrrrr*. A very good idea of the timbre can be gained by striking together two silver dollars so as to produce a smart and rather "live" ring.

Except in two instances, which I am about to describe, I never was struck by any signs of instability in the Brown Towhee's song. On the contrary I had come to consider the song so stereotyped that it would be absurd to expect any marked individual divergences. "Brownie" had become in my mind a dull fellow, musically, particularly devoid of originality. It was refreshing, therefore, to hear first one and then another individual of the species sing a song that was decidedly "off color"—not, mind you, in any trivial matter of mechanics due to inexperience or adventitious defect of execution, but in what I may call subject matter. Both of these "aberrant" singers that by good fortune came to my notice departed from the type utterance of their race by *adding* some *brand*